Application No. 09/945,483 Attorney Docket No. PD-200095

Amendments to the claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

1. (Currently amended) A method of optimizing utilization of user link bandwidth for a code division multiple access communications system comprising the steps of:

selecting a set of orthogonal complex codes, an optimum real code, and a spreading code, each of the set of orthogonal complex codes, the optimum real code, and the spreading code being associated with each of the others and each of the set of orthogonal complex codes, the optimum real code, and the spreading code being related to a value n, the value n being an integer and being the same for each of the codes, the value n being related to a code length for each of the set of orthogonal complex codes, the optimum real code, and the spreading code;

selecting a code length for the set of orthogonal complex codes that is greater than a code length of the associated optimum real code and less than or equal to a code length of the associated spreading code ~~length~~, the length of the set of orthogonal complex codes being chosen so that utilization of a bandwidth of at least one of a plurality of user links is optimized; and

transferring symbols across the at least one of a plurality of user links to or from at least ~~one of a~~ corresponding one of a plurality of user terminals wherein the symbols are represented by a corresponding one of the set of orthogonal complex codes.

2. (Original) The method of Claim 1 wherein the set of orthogonal complex codes is generated from a Kronecker tensor product given by formula:

$$C_{L X P} = A_L \otimes W_P$$

wherein

$C_{L X P}$ is a matrix of orthogonal complex codes wherein each of the orthogonal complex codes has a code length equal to L X P,

L is a positive integer,

P equals 2^n where n equals a positive integer,

W_P is a Walsh code matrix for a code length of P,

A_L is a matrix of coefficients a_{jk} wherein j is a row index equal to 1 ... L, k is a column index equal to 1... L, and

$$a_{jk} = e^{j2\pi(j-1)(k-1)/L}.$$

3. (Previously presented) The method of Claim 1 wherein the corresponding one of the set of orthogonal complex codes has a code length of 12.

4. (Previously presented) The method of Claim 1 wherein the spreading code has a code length of 12.

5. (Currently amended) A code division multiple access communications system comprising:

a base station;

a geo-stationary platform;

a feeder link coupled to the base station and the geo-stationary platform that transfers symbols between the base station and the geo-stationary platform;

a plurality of user terminals; and

a plurality of user links coupled respectively to the plurality of user terminals and to the geo-stationary platform that transfers symbols between the geo-stationary platform and at least one of the plurality of user terminals wherein the symbols are represented by ~~at~~ a corresponding one of a set of orthogonal complex codes having a code length that is greater than a code length of an optimum real code and less than or equal to a ~~spreading code~~ length <u>of a spreading code</u>, wherein each of the set of orthogonal complex codes, the optimum real code, and the spreading code is associated with <u>each of</u> the others and each of the set of orthogonal complex codes, the optimum real code, and the spreading code is related to a value n, the value n being an integer and being the same for each of the codes<u>, the value n being related to a code length for each of the set of orthogonal complex codes, the optimum real code, and the spreading code</u>.

6. (Original) The system of Claim 5 wherein the set of orthogonal complex codes is generated from a Kronecker tensor product given by:

$$C_{L\,X\,P} = A_L \otimes W_P$$

wherein

$C_{L\,X\,P}$ is a matrix of orthogonal complex codes wherein the at least one of the orthogonal complex codes has a code length equal to L X P,

L is a positive integer,

P equals 2^n and n equals a positive integer,

W_P is a Walsh code matrix for a code length of P,

A_L is a matrix of coefficients a_{jk}, where j is a row index equal to 1 ... L, k is a column index equal to 1... L, and

$$a_{jk} = e^{j2\pi(j-1)(k-1)/L}.$$

7. (Original) The system of Claim 5 wherein the at least one of the set of orthogonal complex codes has a code length of 12.

8. (Original) The system of Claim 5 wherein the spreading code has a code length of 12.

9. (Currently amended) A method of increasing utilization of user link bandwidth in a code division multiple access communications system comprising the steps of:

selecting a spreading code length; and

selecting a set of orthogonal complex codes each having a code length that is greater than a code length of an optimum real code and less than or equal to the ~~spreading code~~ length of a spreading code, wherein the spreading code, set of orthogonal complex codes, and optimum real codes are related to a value n, the value n being an integer and being the same for each of the codes, the value n being related to a code length for each of the set of orthogonal complex codes, the optimum real code, and the spreading code; and

transferring the symbols across a user link to or from a user terminal wherein the symbols are represented by a corresponding one of the set of orthogonal complex codes.

10. (Cancelled)